United States Patent [19]

Brittian et al.

[11] **3,882,446**

[45] **May 6, 1975**

[54] **INTERACTIVE HORIZON BUILDING, ANALYSIS AND EDITING**

[75] Inventors: **Ronel W. Brittian**, Dallas; **Falvey L. Malarcher**, Plano; **William A. Schneider**, Dallas, all of Tex.

[73] Assignee: **Texas Instruments Incorporated**, Dallas, Tex.

[22] Filed: **Dec. 30, 1971**

[21] Appl. No.: **214,145**

[52] **U.S. Cl.** .... **340/15.5 DS;** 178/18; 340/15.5 DP; 340/172.5; 340/324 A; 340/365 R

[51] **Int. Cl.**..... **G01v 1/28;** G01v 1/34; G06f 3/14

[58] **Field of Search** ..... 444/1; 340/15, 15.5 DP, 340/15.5 DS, 324 A, 324 AD, 324 R, 172.5, 365 R; 178/18, 20

[56] **References Cited**

UNITED STATES PATENTS

3,399,401	12/1968	Ellis et al.	340/172.5
3,573,855	4/1971	Cragon et al.	340/172.5
3,579,196	5/1971	Gregg et al.	340/172.5
3,585,597	6/1971	Holmerud	340/172.5
3,611,301	10/1971	Parks	340/172.5

Primary Examiner—Harvey E. Springborn
Assistant Examiner—Michael Sachs
Attorney, Agent, or Firm—Hal Levine; Rene E. Grossman; Leo N. Heiting

[57] **ABSTRACT**

A programmed computer-human interaction edit method and system for stored seismic horizon data where a two-dimensional graph of such primary horizon data is placed on a data tablet input to the programmed computer and wherein phantom horizon data with reference to coordinates of the graph are generated in response to human contact through the graph to the data tablet for direct input to the computer. Phantom horizon data is stored in a horizon segment file with primary segment data while preventing entry to the horizon segment file of horizon segment data beyond preselected constraints. Responsive to human contact through the graph to the data tablet at the location of phantom horizons and to stored horizon segment data, a first display of segments of two contiguous phantom horizons is produced with all constraint satisfying segments on the graph within a selectable time gate above and below both of the phantom horizons. A second display is produced of depthpoint-RMS velocity profiles for all segments on the first display. A third display is produced of depthpoint-interval velocity data for the earth section between the horizons on the first display. Upon deletion of any segment from the first display, automatically and substantially simultaneously the second display and the third display are modified to reflect the removal of data corresponding to any deleted segment.

6 Claims, 32 Drawing Figures